

DIGITAL DELAY-LOCKED LOOP CIRCUITS  
WITH HIERARCHICAL DELAY ADJUSTMENT

Abstract of the Disclosure

[0056] Fine tuned signal phase adjustments are  
5 provided by multiple cascaded phase mixers. Each phase  
mixer outputs a signal having a phase between the  
phases of its two input signals. With each subsequent  
stage of phase mixers, the signals generated by the  
phase mixers have a smaller phase difference, thereby  
10 providing finer delay adjustments. Multiple stages of  
phase mixers can be provided in digital delay-locked  
loop circuitry to provide additional hierarchical delay  
adjustment.